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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/692,759

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Yoshiharu Hirakata

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04/24/2006

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EXAMINER

LOUIE, WAI SING

ART UNIT

PAPER NUMBER

2814

DATE MAILED: 04/24/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/692,759

Applicant(s)

HIRAKATA ET AL.

Examiner

Wai-Sing Louie

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 01 March 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 70-193 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 164-193 is/are allowed.
- 6) ☒ Claim(s) 70-163 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 1/19/06.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 70-163 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-102 of U.S. Patent No. 6,638,781. Although the conflicting claims are not identical, they are not patentably distinct from each other because:

With regard to claims 70, 94, US 6,638,781 discloses a semiconductor device comprising:

- A first substrate (claim 1);
- A plurality of pixels arranged in a matrix, each of which comprises a thin film transistor over the substrate (claims 1, 10, and 13);
- An alignment film which covers said columnar spacers (claim 24);
- A second substrate (claim 1);
- A plurality of spacers over the second substrate, where each of the plurality of spacers has a first end, a second end between the first end and second substrate,

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and a center portion between the first end and the second end, where a width of the second end is larger than a width of the center portion, and where a taper portion is formed at the second end (claims 1, 7, and 43);

- A liquid crystal material interposed between the first alignment film and the second alignment film (claim 24);
- US 6,016,781 do not disclose an interlayer over the thin film transistor. However, Shimada discloses an interlayer insulating film over the TFT 3 (Shimada col. 4, lines 56-61). Shimada teaches the interlayer insulating layer is for insulating the TFT 3 (Shimada col. 4, lines 56-61). Therefore, it would have been obvious to one of ordinary skill in the art to modify device of US 6,016,781 with the teaching of Shimada to provide an interlayer insulating film on the display device in order to insulate the TFT ;
- US 6,016,781 modified by Shimada disclose a second alignment film on the plurality of spacers over the second substrate (Shimada fig. 1).

With regard to claims 71-72, 77-78, 83-84, 89-90, 95-96, 102-103, 109-110, 116-117, 123-124, 129-130, 135-136, 141-142, 147-148, 153-154, 159-160, US 6,638,781 modified by Shimada disclose each of the spacers comprises resin material and is disposed regularly (Shimada col. 5, lines 64-66 and fig. 2d).

With regard to claims 73-74, 79-80, 85-86, 91-92, 97-98, 104-105, 111-112, 118-119, 125-126, 131-132, 137-138, 143-144, 149-150, 155-156, 161-162, US 6,016,781 modified by Shimada do not disclose each of the plurality of spacers for every 6 pixels of the plurality of the

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pixels and at a density of 10 to 200 ones per mm². Since the applicant has not established the criticality of the number and density of the spacers stated and since these spacers are in common use in similar devices in the art, it would have been obvious to one of ordinary skill in the art to use these values in the device. Where patentability is said to be based upon particular chosen dimension or upon another variable recited in a claim, the applicant must show that the chosen dimensions are critical. In re Woodruff, 919 F2d 1575, 1578, 16 USPQ2d 1934, 1936 (Fed. Cir. 1990).

With regard to claims 75, 81, 87, 93, 99, 106, 113, 120, 127, 133, 139, 145, 151, 157, 163, US 6,016,781 disclose the width of the center portion is 20 μm or less (claim 4).

With regard to claims 76, 107, 140, in addition to the limitations disclosed in claim 70, US 6,016,781 modified by Shimada also disclose:

- An angle between a tangent plane at a center portion and a surface of the second substrate is 65° to 115° (claim 6).

With regard to claims 82, 114, 146, in addition to the limitations disclosed in claim 70, US 6,016,781 modified by Shimada also disclose:

- An height of the spacer is 0.5 to 10 μm (claim 2).

With regard to claims 88, 121, 152, in addition to the limitations disclosed in claim 70, US 6,016,781 modified by Shimada also disclose:

- a radius of curvature of an edge between an upper surface and a side surface of each of the plurality of spacers is 2 μm or less (claim 1).

With regard to claims 100, 128, in addition to the limitations disclosed in claim 70, US 6,016,781 modified by Shimada also disclose:

- A contact surface between the second alignment film and the spacer is continuously connected to a contact surface between the second alignment film and the conductive film (claim 10), where a taper portion is formed at the second end (claims 1 and 43).

With regard to claims 101, 108, 115, 122, US 6,016,781 modified by Shimada disclose the conductive film is a transparent conductive film (Shimada col. 5, line 4).

With regard to claims 134, 158, in addition to the limitations disclosed in claim 70, US 6,016,781 modified by Shimada also disclose:

- US 6,016,781 does not disclose an angle between the tangent plane at a center portion and a surface of the second substrate is larger than an angle between a tangent plane at a lower portion and the surface of the second substrate. Since the applicant has not established the criticality of the angle stated and since these angles are in common use in similar devices in the art, it would have been obvious to one of ordinary skill in the art to use these values in the device. Where patentability is said to be based upon particular chosen dimension or upon another variable recited in a claim, the applicant must show that the chosen dimensions are critical. In re Woodruff, 919 F2d 1575, 1578, 16 USPQ2d 1934, 1936 (Fed. Cir. 1990).

Allowable Subject Matter

The following is an examiner's statement of reasons for allowance:

The prior art of record does not disclose or suggest either in singularly or in combination the following limitations and other elements in the claims. References US 6,016,781 and Shimada do not disclose:

- Each of the plurality of spacers has a width of the second end L_2 and a width of the center portion L_1 are set in the range of $1 < L_2/L_1 < 2.5$.

Therefore, the above references do not disclose the claimed invention of present application and claims 164-193 are allowed.

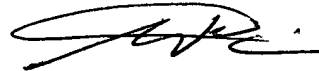
Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Wai-Sing Louie whose telephone number is (571) 272-1709. The examiner can normally be reached on 7:30 AM to 4:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wael Fahmy can be reached on (571) 272-1705. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Wai-Sing Louie
Patent Examiner

Wsl
April 19, 2006.